

AP20 Rec'd PCT/PTO 28 MAR 2006

SEQUENCE LISTING

<110> BIOAXONE THERAPEUTIQUE INC.

MCKERRACHER, LISA

LASKO, DANA

<120> COMPOSITIONS AND METHODS FOR TREATING TUMOR SPREADING

<130> 16627-2PCT

<150> US 10/902,879

<151> 2004-08-02

<150> US 60/506,162

<151> 2003-09-29

<160> 59

<170> PatentIn version 3.1

<210> 1

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used to remove the stop codon from ADP-ribosyl transferase C3 (Clostridium botulinum) cDNA.

<400> 1

gaattcttta ggattgatag ctgtgcc

27

<210> 2

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used to remove the stop codon from ADP-ribosyl transferase C3 (Clostridium botulinum) cDNA.

<400> 2

ggtggcgacc atcctccaaa a

21

<210> 3

<211> 888

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence of C3APL: includes ADP-ribosyl transferase C3 (Clostridium botulinum) and Antennapedia sequence.

<220>

<221> CDS

<222> (1)..(888)

&lt;223&gt;

&lt;400&gt; 3

gga tcc tct aga gtc gac ctg cag gca tgc aat gct tat tcc att aat 48

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn

1 5 10 15

caa aag gct tat tca aat act tac cag gag ttt act aat att gat caa 96

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln

20 25 30

gca aaa gct tgg ggt aat gct cag tat aaa aag tat gga cta agc aaa 144

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys

35 40 45

tca gaa aaa gaa gct ata gta tca tat act aaa agc gct agt gaa ata 192

Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile

50 55 60

aat gga aag cta aga caa aat aag gga gtt atc aat gga ttt cct tca 240

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser

65 70 75 80

aat tta ata aaa caa gtt gaa ctt tta gat aaa tct ttt aat aaa atg 288

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met

85 90 95

aag acc cct gaa aat att atg tta ttt aga ggc gac gac cct gct tat 336

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr  
 100 105 110  
 tta gga aca gaa ttt caa aac act ctt ctt aat tca aat ggt aca att 384  
 Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile  
 115 120 125  
 aat aaa acg gct ttt gaa aag gct aaa gct aag ttt tta aat aaa gat 432  
 Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp  
 130 135 140  
 aga ctt gaa tat gga tat att agt act tca tta atg aat gtc tct caa 480  
 Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln  
 145 150 155 160  
 ttt gca gga aga cca att att aca caa ttt aaa gta gca aaa ggc tca 528  
 Phe Ala Gly Arg Pro Ile Ile Thr Gln Phe Lys Val Ala Lys Gly Ser  
 165 170 175  
 aag gca gga tat att gac cct att agt gct ttt cag gga caa ctt gaa 576  
 Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu  
 180 185 190  
 atg ttg ctt cct aga cat agt act tat cat ata gac gat atg aga ttg 624  
 Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu  
 195 200 205  
 tct tct gat ggt aaa caa ata ata att aca gca aca atg atg ggc aca 672  
 Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr

210 215 220

gct atc aat cct aaa gaa ttc gtg atg gaa tcc cgc aaa cgc gca agg 720  
Ala Ile Asn Pro Lys Glu Phe Val Met Glu Ser Arg Lys Arg Ala Arg  
225 230 235 240

cag aca tac acc cgg tac cag act cta gag cta gag aag gag ttt cac 768  
Gln Thr Tyr Thr Arg Tyr Gln Thr Leu Glu Leu Glu Lys Glu Phe His  
245 250 255

ttc aat cgc tac ttg acc cgt cgg cga agg atc gag atc gcc cac gcc 816  
Phe Asn Arg Tyr Leu Thr Arg Arg Arg Arg Ile Glu Ile Ala His Ala  
260 265 270

ctg tgc ctc acg gag cgc cag ata aag att tgg ttc cag aat cgg cgc 864  
Leu Cys Leu Thr Glu Arg Gln Ile Lys Ile Trp Phe Gln Asn Arg Arg  
275 280 285

atg aag tgg aag aag gag aac tga 888  
Met Lys Trp Lys Lys Glu Asn  
290 295

&lt;210&gt; 4

&lt;211&gt; 295

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Sequence of C3APLT: includes ADP-ribosyl transferase C3 (Clostridium botulinum) and Antennapedia sequence.

<400> 4

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn

1 5 10 15

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln

20 25 30

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys

35 40 45

Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile

50 55 60

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser

65 70 75 80

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met

85 90 95

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr

100

105

110

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile

115

120

125

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp

130

135

140

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln

145

150

155

160

Phe Ala Gly Arg Pro Ile Ile Thr Gln Phe Lys Val Ala Lys Gly Ser

165

170

175

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu

180

185

190

Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu

195

200

205

Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr

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      210              215              220

Ala Ile Asn Pro Lys Glu Phe Val Met Glu Ser Arg Lys Arg Ala Arg
      225              230              235              240

```

Gln Thr Tyr Thr Arg Tyr Gln Thr Leu Glu Leu Glu Lys Glu Phe His  
245 250 255

Phe Asn Arg Tyr Leu Thr Arg Arg Arg Arg Ile Glu Ile Ala His Ala  
260 265 270

Leu Cys Leu Thr Glu Arg Gln Ile Lys Ile Trp Phe Gln Asn Arg Arg  
275 280 285

Met Lys Trp Lys Lys Glu Asn  
290 295

<210> 5

<211> 774

<212> DNA

<213> Artificial Sequence

**<220>**



<223> Sequence of C3APS: Includes ADP-ribosyl transferase C3 (Clostridium botulinum) and Antennapedia sequence.

<220>

<221> CDS

<222> (1)..(774)

<223>

<400> 5

gga tcc tct aga gtc gac ctg cag gca tgc aat gct tat tcc att aat 48  
Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn  
1 5 10 15

caa aag gct tat tca aat act tac cag gag ttt act aat att gat caa 96  
Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln  
20 25 30

gca aaa gct tgg ggt aat gct cag tat aaa aag tat gga cta agc aaa 144  
Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys  
35 40 45

tca gaa aaa gaa gct ata gta tca tat act aaa agc gct agt gaa ata 192  
Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile  
50 55 60

aat gga aag cta aga caa aat aag gga gtt atc aat gga ttt cct tca 240  
Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser  
65 70 75 80

aat tta ata aaa caa gtt gaa ctt tta gat aaa tct ttt aat aaa atg 288

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met

85

90

95

aag acc cct gaa aat att atg tta ttt aga ggc gac gac cct gct tat 336

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr

100

105

110

tta gga aca gaa ttt caa aac act ctt ctt aat tca aat ggt aca att 384

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile

115

120

125

aat aaa acg gct ttt gaa aag gct aaa gct aag ttt tta aat aaa gat 432

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp

130

135

140

aga ctt gaa tat gga tat att agt act tca tta atg aat gtc tct caa 480

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln

145

150

155

160

ttt gca gga aga cca att att aca caa ttt aaa gta gca aaa ggc tca 528

Phe Ala Gly Arg Pro Ile Ile Thr Gln Phe Lys Val Ala Lys Gly Ser

165

170

175

aag gca gga tat att gac cct att agt gct ttt cag gga caa ctt gaa 576

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu

180

185

190

atg ttg ctt cct aga cat agt act tat cat ata gac gat atg aga ttg 624  
Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu

195

200

205

tct tct gat ggt aaa caa ata ata att aca gca aca atg atg ggc aca 672  
Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr

210

215

220

gct atc aat cct aaa gaa ttc cgc cag atc aag att tgg ttc cag aat 720  
Ala Ile Asn Pro Lys Glu Phe Arg Gln Ile Lys Ile Trp Phe Gln Asn  
225 230 235 240

cgt cgc atg aag tgg aag aag gtc gac tcg agc ggc cgc atc gtg act 768  
Arg Arg Met Lys Trp Lys Lys Val Asp Ser Ser Gly Arg Ile Val Thr

245

250

255

gac tga 774  
Asp

&lt;210&gt; 6

&lt;211&gt; 257

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Sequence of C3APS: Includes ADP-ribosyl transferase C3 (Clostridium botulinum) and Antennapedia sequence.

&lt;400&gt; 6

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn

1

5

10

15

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln

20

25

30

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys

35

40

45

Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile

50

55

60

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser

65

70

75

80

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met

85

90

95

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr

100

105

110

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile

115

120

125

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp

130

135

140

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln

145

150

155

160

Phe Ala Gly Arg Pro Ile Ile Thr Gln Phe Lys Val Ala Lys Gly Ser

165

170

175

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu

180

185

190

Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu

195

200

205

Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr

210

215

220

Ala Ile Asn Pro Lys Glu Phe Arg Gln Ile Lys Ile Trp Phe Gln Asn

225

230

235

240

Arg Arg Met Lys Trp Lys Lys Val Asp Ser Ser Gly Arg Ile Val Thr

245

250

255

Asp

&lt;210&gt; 7

&lt;211&gt; 24

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Oligonucleotide used in the amplification of Antennapedia sequenc  
e

&lt;400&gt; 7

gaatcccgca aacgcgcaag gcag

24

&lt;210&gt; 8

&lt;211&gt; 27

&lt;212&gt; DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the amplification of Antennapedia sequence  
e

<400> 8

tcagttctcc ttcttccact tcatgcg

27

<210> 9

<211> 54

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the cloning of sequences from Antennapedia  
a

<400> 9

aattccgccg gatcaagatt tggttccaga atcgtcgcat gaagtggaag aagg

54

<210> 10

<211> 54

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the cloning of sequences from Antennapedia  
a

<400> 10

ggcgggtctag ttctaaacca agctcttagc agcgtagttc accttcttcc agct

54

<210> 11

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the amplification of a sequence corresponding to amino acid 27-72 of HIV-1 Tat

<400> 11

gaatccaagc atccaggaag tcagcc

26

<210> 12

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the amplification of a sequence corresponding to amino acid 27-72 of HIV-1 Tat



&lt;400&gt; 12

accagccacc accttctgat a

21

&lt;210&gt; 13

&lt;211&gt; 876

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Sequence of C3-TL: Includes ADP-ribosyl transferase C3 (Clostridium botulinum) and HIV-1 Tat sequence.

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(876)

&lt;223&gt;

&lt;400&gt; 13

gga tcc tct aga gtc gac ctg cag gca tgc aat gct tat tcc att aat 48

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn

1 5 10 15

caa aag gct tat tca aat act tac cag gag ttt act aat att gat caa 96

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln

20 25 30

gca aaa gct tgg ggt aat gct cag tat aaa aag tat gga cta agc aaa 144

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys,  
 35 40 45

tca gaa aaa gaa gct ata gta tca tat act aaa agc gct agt gaa ata 192  
 Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile  
 50 55 60

aat gga aag cta aga caa aat aag gga gtt atc aat gga ttt cct tca 240  
 Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser  
 65 70 75 80

aat tta ata aaa caa gtt gaa ctt tta gat aaa tct ttt aat aaa atg 288  
 Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met  
 85 90 95

aag acc cct gaa aat att atg tta ttt aga ggc gac gac cct gct tat 336  
 Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr  
 100 105 110

tta gga aca gaa ttt caa aac act ctt ctt aat tca aat ggt aca att 384  
 Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile  
 115 120 125

aat aaa acg gct ttt gaa aag gct aaa gct aag ttt tta aat aaa gat 432  
 Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp  
 130 135 140

aga ctt gaa tat gga tat att agt act tca tta atg aat gtc tct caa 480  
 Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln

145	150	155	160	
ttt gca gga aga cca att att aca caa ttt aaa gta gca aaa ggc tca				528
Phe Ala Gly Arg Pro Ile Ile Thr Gln Phe Lys Val Ala Lys Gly Ser				
	165	170	175	
aag gca gga tat att gac cct att agt gct ttt cag gga caa ctt gaa				576
Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu				
	180	185	190	
atg ttg ctt cct aga cat agt act tat cat ata gac gat atg aga ttg				624
Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu				
	195	200	205	
tct tct gat ggt aaa caa ata ata att aca gca aca atg atg ggc aca				672
Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr				
	210	215	220	
gct atc aat cct aaa gaa ttc aag cat cca gga agt cag cct aaa act				720
Ala Ile Asn Pro Lys Glu Phe Lys His Pro Gly Ser Gln Pro Lys Thr				
	225	230	235	240
gct tgt acc aat tgc tat tgt aaa aag tgt tgc ttt cat tgc caa gtt				768
Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe His Cys Gln Val				
	245	250	255	
tgt ttc ata aca aaa gcc tta ggc atc tcc tat ggc agg aag cgg aga				816
Cys Phe Ile Thr Lys Ala Leu Gly Ile Ser Tyr Gly Arg Lys Arg Arg				
	260	265	270	

cag cga cga aga gct cat cag aac agt cag act cat caa gct tct cta 864

Gln Arg Arg Arg Ala His Gln Asn Ser Gln Thr His Gln Ala Ser Leu

275

280

285

tca aag cag taa

876

Ser Lys Gln

290

<210> 14

<211> 291

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of C3-TL: Includes ADP-ribosyl transferase C3 (Clostridium botulinum) and HIV-1 Tat sequence.

<400> 14

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn

1

5

10

15

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln

20

25

30

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys

35

40

45

Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile

50

55

60

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser

65

70

75

80

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met

85

90

95

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr

100

105

110

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile

115

120

125

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp

130

135

140

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln

145

150

155

160

Phe Ala Gly Arg Pro Ile Ile Thr Gln Phe Lys Val Ala Lys Gly Ser

165

170

175

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu

180

185

190

Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu

195

200

205

Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr

210

215

220

Ala Ile Asn Pro Lys Glu Phe Lys His Pro Gly Ser Gln Pro Lys Thr

225

230

235

240

Ala Cys Thr Asn Cys Tyr Cys Lys Lys Cys Cys Phe His Cys Gln Val

245

250

255

Cys Phe Ile Thr Lys Ala Leu Gly Ile Ser Tyr Gly Arg Lys Arg Arg

260

265

270

Gln Arg Arg Arg Ala His Gln Asn Ser Gln Thr His Gln Ala Ser Leu

275

280

285

Ser Lys Gln

290

<210> 15

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the cloning of sequences from HIV-1 Tat

<400> 15

aattctatgg tcgtaaaaaa cgtcgtcaac gtcgtcgtg

39

<210> 16

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the cloning of sequences from HIV-1 Tat

<400> 16

gataccagca ttttttgcag cagttgcagc agcacagct

39

<210> 17

<211> 756

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence of C3-TS: Includes ADP-ribosyl transferase C3 (Clostridium botulinum) and HIV-1 Tat sequence.

<220>

<221> CDS

<222> (1) .. (756)

<223>

<400> 17

gga tcc tct aga gtc gac ctg cag gca tgc aat gct tat tcc att aat

48

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn

1

5

10

15

caa aag gct tat tca aat act tac cag gag ttt act aat att gat caa

96

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln

20

25

30



gca aaa gct tgg ggt aat gct cag tat aaa aag tat gga cta agc aaa 144  
 Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys  
 35 40 45

tca gaa aaa gaa gct ata gta tca tat act aaa agc gct agt gaa ata 192  
 Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile  
 50 55 60

aat gga aag cta aga caa aat aag gga gtt atc aat gga ttt cct tca 240  
 Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser  
 65 70 75 80

aat tta ata aaa caa gtt gaa ctt tta gat aaa tct ttt aat aaa atg 288  
 Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met  
 85 90 95

aag acc cct gaa aat att atg tta ttt aga ggc gac gac cct gct tat 336  
 Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr  
 100 105 110

tta gga aca gaa ttt caa aac act ctt ctt aat tca aat ggt aca att 384  
 Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile  
 115 120 125

aat aaa acg gct ttt gaa aag gct aaa gct aag ttt tta aat aaa gat 432  
 Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp  
 130 135 140

aga ctt gaa tat gga tat att agt act tca tta atg aat gtc tct caa 480

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln  
 145 150 155 160  
  
 ttt gca gga aga cca att att aca caa ttt aaa gta gca aaa ggc tca 528  
 Phe Ala Gly Arg Pro Ile Ile Thr Gln Phe Lys Val Ala Lys Gly Ser  
 165 170 175  
  
 aag gca gga tat att gac cct att agt gct ttt cag gga caa ctt gaa 576  
 Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu  
 180 185 190  
  
 atg ttg ctt cct aga cat agt act tat cat ata gac gat atg aga ttg 624  
 Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu  
 195 200 205  
  
 tct tct gat ggt aaa caa ata ata att aca gca aca atg atg ggc aca 672  
 Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr  
 210 215 220  
  
 gct atc aat cct aaa gaa ttc tat ggt gct aaa aaa cgt cgt caa cgt 720  
 Ala Ile Asn Pro Lys Glu Phe Tyr Gly Ala Lys Lys Arg Arg Gln Arg  
 225 230 235 240  
  
 cgt cgt gtc gac tcg agc ggc ccg cat cgt gac tga 756  
 Arg Arg Val Asp Ser Ser Gly Pro His Arg Asp  
 245 250

&lt;210&gt; 18

<211> 251

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of C3-TS: Includes ADP-ribosyl transferase C3 (Clostridium botulinum) and HIV-1 Tat sequence.

<400> 18

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn

1 5 10 15

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln

20 25 30

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys

35 40 45

Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile

50 55 60

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser

65 70 75 80

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met

85

90

95

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr

100

105

110

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile

115

120

125

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp

130

135

140

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln

145

150

155

160

Phe Ala Gly Arg Pro Ile Ile Thr Gln Phe Lys Val Ala Lys Gly Ser

165

170

175

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu

180

185

190

Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu

195

200

205

Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr

210

215

220

Ala Ile Asn Pro Lys Glu Phe Tyr Gly Ala Lys Lys Arg Arg Gln Arg

225

230

235

240

Arg Arg Val Asp Ser Ser Gly Pro His Arg Asp

245

250

&lt;210&gt; 19

&lt;211&gt; 1413

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Includes GST sequences, ADP-ribosyl transferase C3 (C. botulinum  
) sequence and a random basic amino acid sequence.

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(1413)

&lt;223&gt;

&lt;400&gt; 19

atg tcc cct ata cta ggt tat tgg aaa att aag ggc ctt gtg caa ccc 48

Met Ser Pro Ile Leu Gly Tyr Trp Lys Ile Lys Gly Leu Val Gln Pro

1 5 10 15

act cga ctt ctt ttg gaa tat ctt gaa gaa aaa tat gaa gag cat ttg 96

Thr Arg Leu Leu Leu Glu Tyr Leu Glu Glu Lys Tyr Glu Glu His Leu

20 25 30

tat gag cgc gat gaa ggt gat aaa tgg cga aac aaa aag ttt gaa ttg 144

Tyr Glu Arg Asp Glu Gly Asp Lys Trp Arg Asn Lys Lys Phe Glu Leu

35 40 45

ggg ttg gag ttt ccc aat ctt cct tat tat att gat ggt gat gtt aaa 192

Gly Leu Glu Phe Pro Asn Leu Pro Tyr Tyr Ile Asp Gly Asp Val Lys

50 55 60

tta aca cag tct atg gcc atc ata cgt tat ata gct gac aag cac aac 240

Leu Thr Gln Ser Met Ala Ile Ile Arg Tyr Ile Ala Asp Lys His Asn

65 70 75 80

atg ttg ggt ggt tgt cca aaa gag cgt gca gag att tca atg ctt gaa 288

Met Leu Gly Gly Cys Pro Lys Glu Arg Ala Glu Ile Ser Met Leu Glu

85 90 95

gga gcg gtt ttg gat att aga tac ggt gtt tcg aga att gca tat agt 336

Gly Ala Val Leu Asp Ile Arg Tyr Gly Val Ser Arg Ile Ala Tyr Ser

100	105	110	
aaa gac ttt gaa act ctc aaa gtt gat ttt ctt agc aag cta cct gaa Lys Asp Phe Glu Thr Leu Lys Val Asp Phe Leu Ser Lys Leu Pro Glu			384
115	120	125	
atg ctg aaa atg ttc gaa gat cgt tta tgt cat aaa aca tat tta aat Met Leu Lys Met Phe Glu Asp Arg Leu Cys His Lys Thr Tyr Leu Asn			432
130	135	140	
ggt gat cat gta acc cat cct gac ttc atg ttg tat gac gct ctt gat Gly Asp His Val Thr His Pro Asp Phe Met Leu Tyr Asp Ala Leu Asp			480
145	150	155	160
gtt gtt tta tac atg gac cca atg tgc ctg gat gcg ttc cca aaa tta Val Val Leu Tyr Met Asp Pro Met Cys Leu Asp Ala Phe Pro Lys Leu			528
165	170	175	
gtt tgt ttt aaa aaa cgt att gaa gct atc cca caa att gat aag tac Val Cys Phe Lys Lys Arg Ile Glu Ala Ile Pro Gln Ile Asp Lys Tyr			576
180	185	190	
ttg aaa tcc agc aag tat ata gca tgg cct ttg cag ggc tgg caa gcc Leu Lys Ser Ser Lys Tyr Ile Ala Trp Pro Leu Gln Gly Trp Gln Ala			624
195	200	205	
acg ttt ggt ggt ggc gac cat cct cca aaa tcg gat ctg gtt ccg cgt Thr Phe Gly Gly Gly Asp His Pro Pro Lys Ser Asp Leu Val Pro Arg			672
210	215	220	

gga tcc tct aga gtc gac ctg cag gca tgc aat gct tat tcc att aat 720

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn

225 230 235 240

caa aag gct tat tca aat act tac cag gag ttt act aat att gat caa 768

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln

245 250 255

gca aaa gct tgg ggt aat gct cag tat aaa aag tat gga cta agc aaa 816

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys

260 265 270

tca gaa aaa gaa gct ata gta tca tat act aaa agc gct agt gaa ata 864

Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile

275 280 285

aat gga aag cta aga caa aat aag gga gtt atc aat gga ttt cct tca 912

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser

290 295 300

aat tta ata aaa caa gtt gaa ctt tta gat aaa tct ttt aat aaa atg 960

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met

305 310 315 320

aag acc cct gaa aat att atg tta ttt aga ggc gac gac cct gct tat 1008

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr

325 330 335



tta gga aca gaa ttt caa aac act ctt ctt aat tca aat ggt aca att	1056
Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile	
340 345 350	
aat aaa acg gct ttt gaa aag gct aaa gct aag ttt tta aat aaa gat	1104
Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp	
355 360 365	
aga ctt gaa tat gga tat att agt act tca tta atg aat gtt tct caa	1152
Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln	
370 375 380	
ttt gca gga aga cca att att aca aaa ttt aaa gta gca aaa ggc tca	1200
Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser	
385 390 395 400	
aag gca gga tat att gac cct att agt gct ttt cag gga caa ctt gaa	1248
Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu	
405 410 415	
atg ttg ctt cct aga cat agt act tat cat ata gac gat atg aga ttg	1296
Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu	
420 425 430	
tct tct gat ggt aaa caa ata ata att aca gca aca atg atg ggc aca	1344
Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr	
435 440 445	
gct atc aat cct aaa gaa ttc aga agg aaa caa aga aga aaa aga aga	1392

Ala Ile Asn Pro Lys Glu Phe Arg Arg Lys Gln Arg Arg Lys Arg Arg

450

455

460

ctg cag gcg gcc gca tcg tga

1413

Leu Gln Ala Ala Ala Ser

465

470

&lt;210&gt; 20

&lt;211&gt; 470

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Includes GST sequences, ADP-ribosyl transferase C3 (C. botulinum  
) sequence and a random basic amino acid sequence.

&lt;400&gt; 20

Met Ser Pro Ile Leu Gly Tyr Trp Lys Ile Lys Gly Leu Val Gln Pro

1

5

10

15

Thr Arg Leu Leu Leu Glu Tyr Leu Glu Glu Lys Tyr Glu Glu His Leu

20

25

30

Tyr Glu Arg Asp Glu Gly Asp Lys Trp Arg Asn Lys Lys Phe Glu Leu

35

40

45

Gly Leu Glu Phe Pro Asn Leu Pro Tyr Tyr Ile Asp Gly Asp Val Lys

50

55

60

Leu Thr Gln Ser Met Ala Ile Ile Arg Tyr Ile Ala Asp Lys His Asn

65

70

75

80

Met Leu Gly Gly Cys Pro Lys Glu Arg Ala Glu Ile Ser Met Leu Glu

85

90

95

Gly Ala Val Leu Asp Ile Arg Tyr Gly Val Ser Arg Ile Ala Tyr Ser

100

105

110

Lys Asp Phe Glu Thr Leu Lys Val Asp Phe Leu Ser Lys Leu Pro Glu

115

120

125

Met Leu Lys Met Phe Glu Asp Arg Leu Cys His Lys Thr Tyr Leu Asn

130

135

140

Gly Asp His Val Thr His Pro Asp Phe Met Leu Tyr Asp Ala Leu Asp

145

150

155

160

Val Val Leu Tyr Met Asp Pro Met Cys Leu Asp Ala Phe Pro Lys Leu

165

170

175

Val Cys Phe Lys Lys Arg Ile Glu Ala Ile Pro Gln Ile Asp Lys Tyr

180

185

190

Leu Lys Ser Ser Lys Tyr Ile Ala Trp Pro Leu Gln Gly Trp Gln Ala

195

200

205

Thr Phe Gly Gly Gly Asp His Pro Pro Lys Ser Asp Leu Val Pro Arg

210

215

220

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn

225

230

235

240

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln

245

250

255

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys

260

265

270

Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile

275

280

285

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser

290

295

300

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met

305

310

315

320

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr

325

330

335

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile

340

345

350

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp

355

360

365

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln

370

375

380

Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser

385

390

395

400

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu

405

410

415

Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu

420

425

430

Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr

435

440

445

Ala Ile Asn Pro Lys Glu Phe Arg Arg Lys Gln Arg Arg Lys Arg Arg

450

455

460

Leu Gln Ala Ala Ala Ser

465

470

&lt;210&gt; 21

&lt;211&gt; 16

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Random basic amino acid sequence of C3Basic1

<400> 21

Lys Arg Arg Arg Arg Arg Pro Lys Lys Arg Arg Arg Ala Lys Arg Arg

1

5

10

15

<210> 22

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the cloning of a random basic amino acid  
sequence in C3Basic1

<400> 22

aagagaaggc gaagaagacc taagaagaga cgaagggcga agaggaga

48

<210> 23

<211> 48

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the cloning of a random basic amino acid  
sequence in C3Basic1

&lt;400&gt; 23

ttctcttccg cttctttctgg attctttctct gcttcccgc tctctctt

48

&lt;210&gt; 24

&lt;211&gt; 792

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Sequence of C3Basic1: includes ADP-ribosyl transferase C3 (Clostridium botulinum) sequence and a sequence encoding a random basic amino acid sequence and a Histidine tag.

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)..(792)

&lt;223&gt;

&lt;400&gt; 24

gga tcc tct aga gtc gac ctg cag gca tgc aat gct tat tcc att aat

48

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn

1

5

10

15

caa aag gct tat tca aat act tac cag gag ttt act aat att gat caa

96

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln

20

25

30



gca aaa gct tgg ggt aat gct cag tat aaa aag tat gga cta agc aaa 144

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys

35

40

45

tca gaa aaa gaa gct ata gta tca tat act aaa agc gct agt gaa ata 192

Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile

50

55

60

aat gga aag cta aga caa aat aag gga gtt atc aat gga ttt cct tca 240

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser

65

70

75

80

aat tta ata aaa caa gtt gaa ctt tta gat aaa tct ttt aat aaa atg 288

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met

85

90

95

aag acc cct gaa aat att atg tta ttt aga ggc gac gac cct gct tat 336

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr

100

105

110

tta gga aca gaa ttt caa aac act ctt ctt aat tca aat ggt aca att 384

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile

115

120

125

aat aaa acg gct ttt gaa aag gct aaa gct aag ttt tta aat aaa gat 432

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp

130

135

140

aga ctt gaa tat gga tat att agt act tca tta atg aat gtt tct caa 480  
 Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln  
 145 150 155 160

ttt gca gga aga cca att att aca aaa ttt aaa gta gca aaa ggc tca 528  
 Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser  
 165 170 175

aag gca gga tat att gac cct att agt gct ttt cag gga caa ctt gaa 576  
 Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu  
 180 185 190

atg ttg ctt cct aga cat agt act tat cat ata gac gat atg aga ttg 624  
 Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu  
 195 200 205

tct tct gat ggt aaa caa ata ata att aca gca aca atg atg ggc aca 672  
 Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr  
 210 215 220

gct atc aat cct aaa gaa ttc aag aga agg cga aga aga cct aag aag 720  
 Ala Ile Asn Pro Lys Glu Phe Lys Arg Arg Arg Arg Arg Pro Lys Lys  
 225 230 235 240

aga cga agg gcg aag agg aga cac cac cac cac cac cac gtc gac tcg 768  
 Arg Arg Arg Ala Lys Arg Arg His His His His His His Val Asp Ser  
 245 250 255

agc ggc cgc atc gtg act gac tga 792

Ser Gly Arg Ile Val Thr Asp

260

<210> 25

<211> 263

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of C3Basic1: includes ADP-ribosyl transferase C3 (Clostridium botulinum) sequence and a sequence encoding a random basic amino acid sequence and a Histidine tag.

<400> 25

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn

1 5 10 15

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln

20 25 30

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys

35 40 45

Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile

50

55

60

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser

65

70

75

80

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met

85

90

95

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr

100

105

110

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile

115

120

125

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp

130

135

140

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln

145

150

155

160

Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser

165

170

175

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu

180

185

190

Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu

195

200

205

Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr

210

215

220

Ala Ile Asn Pro Lys Glu Phe Lys Arg Arg Arg Arg Arg Pro Lys Lys

225

230

235

240

Arg Arg Arg Ala Lys Arg Arg His His His His His His Val Asp Ser

245

250

255

Ser Gly Arg Ile Val Thr Asp

260

&lt;210&gt; 26

&lt;211&gt; 13

&lt;212&gt; PRT

<213> Artificial Sequence

<220>

<223> Random amino acid sequence of C3Basic2

<400> 26

Lys Arg Arg Arg Arg Lys Lys Arg Arg Gln Arg Arg Arg

1

5

10

<210> 27

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the cloning of a random basic amino acid  
sequence in C3Basic2

<400> 27

aagcgtcgac gtagaaagaa acgtagaCag cgtagacgt

39

<210> 28

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the cloning of a random basic amino acid sequence in C3Basic2

<400> 28

ttcgcagctg catctttctt tgcacctgtc gcatctgca

39

<210> 29

<211> 783

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence of C3Basic2: includes sequences from ADP-ribosyl-transferase C3 (Clostridium botulinum) and a sequence encoding a random basic amino acid sequence and a histidine tag.

<220>

<221> CDS

<222> (1) .. (783)

<223>

<400> 29

gga tcc tct aga gtc gac ctg cag gca tgc aat gct tat tcc att aat

48

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn

1

5

10

15

caa aag gct tat tca aat act tac cag gag ttt act aat att gat caa 96  
Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln

20

25

30

gca aaa gct tgg ggt aat gct cag tat aaa aag tat gga cta agc aaa 144  
Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys

35

40

45

tca gaa aaa gaa gct ata gta tca tat act aaa agc gct agt gaa ata 192  
Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile

50

55

60

aat gga aag cta aga caa aat aag gga gtt atc aat gga ttt cct tca 240  
Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser

65

70

75

80

aat tta ata aaa caa gtt gaa ctt tta gat aaa tct ttt aat aaa atg 288  
Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met

85

90

95

aag acc cct gaa aat att atg tta ttt aga ggc gac gac cct gct tat 336  
Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr

100

105

110

tta gga aca gaa ttt caa aac act ctt ctt aat tca aat ggt aca att 384  
Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile

115

120

125

aat aaa acg gct ttt gaa aag gct aaa gct aag ttt tta aat aaa gat 432



Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp  
 130 135 140

aga ctt gaa tat gga tat att agt act tca tta atg aat gtt tct caa 480  
 Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln  
 145 150 155 160

ttt gca gga aga cca att att aca aaa ttt aaa gta gca aaa ggc tca 528  
 Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser  
 165 170 175

aag gca gga tat att gac cct att agt gct ttt cag gga caa ctt gaa 576  
 Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu  
 180 185 190

atg ttg ctt cct aga cat agt act tat cat ata gac gat atg aga ttg 624  
 Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu  
 195 200 205

tct tct gat ggt aaa caa ata ata att aca gca aca atg atg ggc aca 672  
 Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr  
 210 215 220

gct atc aat cct aaa gaa ttc aag cgt cga cgt aga aag aaa cgt aga 720  
 Ala Ile Asn Pro Lys Glu Phe Lys Arg Arg Arg Arg Lys Lys Arg Arg  
 225 230 235 240

cag cgt aga cgt cac cac cac cac cac cac gtc gac tcg agc ggc cgc 768  
 Gln Arg Arg Arg His His His His His His Val Asp Ser Ser Gly Arg

245

250

255

atc gtg act gac tga

783

Ile Val Thr Asp

260

&lt;210&gt; 30

&lt;211&gt; 260

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Sequence of C3Basic2: includes sequences from ADP-ribosyl-transf  
erage C3 (Clostridium botulinum) and a sequence encoding a random  
basic amino acid sequence and a histidine tag.

&lt;400&gt; 30

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn

1

5

10

15

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln

20

25

30

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys

35

40

45

Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile

50

55

60

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser

65

70

75

80

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met

85

90

95

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr

100

105

110

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile

115

120

125

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp

130

135

140

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln

145

150

155

160

Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser

165

170

175

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu

180

185

190

Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu

195

200

205

Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr

210

215

220

Ala Ile Asn Pro Lys Glu Phe Lys Arg Arg Arg Arg Lys Lys Arg Arg

225

230

235

240

Gln Arg Arg Arg His His His His His His Val Asp Ser Ser Gly Arg

245

250

255

Ile Val Thr Asp

260

<210> 31

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Reverse HIV-1 Tat amino acid sequence of C3Basic3

<400> 31

Arg Arg Lys Gln Arg Arg Lys Arg Arg

1

5

<210> 32

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the cloning of a reverse HIV Tat sequence  
in C3Basic3

<400> 32

agaaggaaac aaagaagaaa aagaaga

27

<210> 33

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the cloning of a reverse HIV Tat sequence  
in C3Basic3

<400> 33

tcttcctttg tttcttcttt ttcttct

27

<210> 34

<211> 771

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence of C3Basic3: includes sequences from ADP-ribosyl transferase C3 (C. botulinum) and a sequence encoding a reverse HIV-1 Tat amino acid sequence and a Histidine tag

<220>

<221> CDS

<222> (1)..(771)

<223>

<400> 34

gga tcc tct aga gtc gac ctg cag gca tgc aat gct tat tcc att aat

48

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn  
 1 5 10 15  
 caa aag gct tat tca aat act tac cag gag ttt act aat att gat caa 96  
 Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln  
 20 25 30  
 gca aaa gct tgg ggt aat gct cag tat aaa aag tat gga cta agc aaa 144  
 Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys  
 35 40 45  
 tca gaa aaa gaa gct ata gta tca tat act aaa agc gct agt gaa ata 192  
 Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile  
 50 55 60  
 aat gga aag cta aga caa aat aag gga gtt atc aat gga ttt cct tca 240  
 Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser  
 65 70 75 80  
 aat tta ata aaa caa gtt gaa ctt tta gat aaa tct ttt aat aaa atg 288  
 Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met  
 85 90 95  
 aag acc cct gaa aat att atg tta ttt aga ggc gac gac cct gct tat 336  
 Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr  
 100 105 110  
 tta gga aca gaa ttt caa aac act ctt ctt aat tca aat ggt aca att 384  
 Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile

115	120	125	
aat aaa acg gct ttt gaa aag gct aaa gct aag ttt tta aat aaa gat			432
Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp			
130	135	140	
aga ctt gaa tat gga tat att agt act tca tta atg aat gtt tct caa			480
Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln			
145	150	155	160
ttt gca gga aga cca att att aca aaa ttt aaa gta gca aaa ggc tca			528
Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser			
	165	170	175
aag gca gga tat att gac cct att agt gct ttt cag gga caa ctt gaa			576
Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu			
180	185	190	
atg ttg ctt cct aga cat agt act tat cat ata gac gat atg aga ttg			624
Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu			
195	200	205	
tct tct gat ggt aaa caa ata ata att aca gca aca atg atg ggc aca			672
Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr			
210	215	220	
gct atc aat cct aaa gaa ttc aga agg aaa caa aga aga aaa aga aga			720
Ala Ile Asn Pro Lys Glu Phe Arg Arg Lys Gln Arg Arg Lys Arg Arg			
225	230	235	240



cac cac cac cac cac cac gtc gac tcg agc ggc cgc atc gtg act gac 768

His His His His His His Val Asp Ser Ser Gly Arg Ile Val Thr Asp

245

250

255

tga

771

<210> 35

<211> 256

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of C3Basic3: includes sequences from ADP-ribosyl transferase C3 (C. botulinum) and a sequence encoding a reverse HIV-1 Tat amino acid sequence and a Histidine tag

<400> 35

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn

1

5

10

15

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln

20

25

30

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys

35

40

45

Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile

50

55

60

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser

65

70

75

80

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met

85

90

95

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr

100

105

110

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile

115

120

125

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp

130

135

140

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln

145

150

155

160

Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser

165

170

175

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Gln Leu Glu

180

185

190

Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu

195

200

205

Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr

210

215

220

Ala Ile Asn Pro Lys Glu Phe Arg Arg Lys Gln Arg Arg Lys Arg Arg

225

230

235

240

His His His His His His Val Asp Ser Ser Gly Arg Ile Val Thr Asp

245

250

255

&lt;210&gt; 36

&lt;211&gt; 887

&lt;212&gt; DNA

<213> Artificial Sequence

<220>

<223> Sequence of C3APLT: includes sequences from ADP-ribosyl transferase C3 (Clostridium botulinum) and a sequence encoding a proline rich region.

<220>

<221> CDS

<222> (1) .. (747)

<223>

<400> 36

gga tcc tct aga gtc gac ctg cag gca tgc aat gct tat tcc att aat 48

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn

1 5 10 15

caa aag gct tat tca aat act tac cag gag ttt act aat att gat caa 96

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln

20 25 30

gca aaa gct tgg ggt aat gct cag tat aaa aag tat gga cta agc aaa 144

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys

35 40 45

tca gaa aaa gaa gct ata gta tca tat act aaa agc gct agt gaa ata 192

Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile

50 55 60

aat gga aag cta aga caa aat aag gga gtt atc aat gga ttt cct tca 240

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser

65

70

75

80

aat tta ata aaa caa gtt gaa ctt tta gat aaa tct ttt aat aaa atg 288

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met

85

90

95

aag acc cct gaa aat att atg tta ttt aga ggc gac gac cct gct tat 336

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr

100

105

110

tta gga aca gaa ttt caa aac act ctt ctt aat tca aat ggt aca att 384

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile

115

120

125

aat aaa acg gct ttt gaa aag gct aaa gct aag ttt tta aat aaa gat 432

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp

130

135

140

aga ctt gaa tat gga tat att agt act tca tta atg aat gtt tct caa 480

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln

145

150

155

160

ttt gca gga aga cca att att aca aaa ttt aaa gta gca aaa ggc tca 528

Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser

165

170

175

aag gca gga tat att gac cct att agt gct ttt gca gga caa ctt gaa 576  
Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Ala Gly Gln Leu Glu

180

185

190

atg ttg ctt cct aga cat agt act tat cat ata gac gat atg aga ttg 624  
Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu

195

200

205

tct tct gat ggt aaa caa ata ata att aca gca aca atg atg ggc aca 672  
Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr

210

215

220

gct atc aat cct aaa gaa ttc gtg atg aat ccc gca aac gcg caa ggc 720  
Ala Ile Asn Pro Lys Glu Phe Val Met Asn Pro Ala Asn Ala Gln Gly

225

230

235

240

aga cat aca ccc ggt acc aga ctc tag agctagagaa ggagtttcac 767  
Arg His Thr Pro Gly Thr Arg Leu

245

ttcaatcgct acttgacccg tcggcgaagg atcgagatcg cccacgccct gtgcctcag 827

gagcgccaga taaagatttg gttccagaat cggcgcacatga agtggaagaa ggagaactga 887

&lt;210&gt; 37

&lt;211&gt; 248

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Sequence of C3APLT: includes sequences from ADP-ribosyl transferase C3 (Clostridium botulinum) and a sequence encoding a proline rich region.

&lt;400&gt; 37

Gly Ser Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn

1

5

10

15

Gln Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln

20

25

30

Ala Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys

35

40

45

Ser Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile

50

55

60

Asn Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser

65

70

75

80

Asn Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met

85

90

95

Lys Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr

100

105

110

Leu Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile

115

120

125

Asn Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp

130

135

140

Arg Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln

145

150

155

160

Phe Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser

165

170

175

Lys Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Ala Gly Gln Leu Glu

180

185

190

Met Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu

195

200

205



Ser Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr

210

215

220

Ala Ile Asn Pro Lys Glu Phe Val Met Asn Pro Ala Asn Ala Gln Gly

225

230

235

240

Arg His Thr Pro Gly Thr Arg Leu

245

&lt;210&gt; 38

&lt;211&gt; 37

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Oligonucleotide used in the cloning of C3APLT in pET vector

&lt;400&gt; 38

ggatctgggtt ccgcgtcata tgtctagagt cgacctg

37

&lt;210&gt; 39

&lt;211&gt; 32

&lt;212&gt; DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the cloning of C3APLT in pET vector

<400> 39

cgcggatcca ttagttctcc ttcttcact tc

32

<210> 40

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the sequencing of C3APLT

<400> 40

aaattaatac gactcactat aggg

24

<210> 41

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Oligonucleotide used in the sequencing of C3APLT

<400> 41

gctagttatt gctcagcgg

19

<210> 42

<211> 888

<212> DNA

<213> Artificial Sequence

<220>

<223> Sequence of C3APLT in a pET vector: includes sequences from ADP  
-ribosyl transferase C3 (Clostridium botulinum) and a sequence en  
coding a proline rich region.

<220>

<221> CDS

<222> (1)...(744)

<223>

<400> 42

atg tct aga gtc gca ctg cag gca tgc aat gct tat tcc att aat caa 48

Met Ser Arg Val Ala Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn Gln

1

5

10

15

aag gct tat tca aat act tac cag gag ttt act aat att gat caa gca 96

Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln Ala

20

25

30

aaa gct tgg ggt aat gct cag tat aaa aag tat gga cta agc aaa tca 144  
 Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys Ser

35

40

45

gaa aaa gaa gct ata gta tca tat act aaa agc gct agt gaa ata aat 192  
 Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile Asn

50

55

60

gga aag cta aga caa aat aag gga gtt atc aat gga ttt cct tca aat 240  
 Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser Asn

65

70

75

80

tta ata aaa caa gtt gaa ctt tta gat aaa tct ttt aat aaa atg aag 288  
 Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met Lys

85

90

95

acc cct gaa aat att atg tta ttt aga ggc gac gac cct gct tat tta 336  
 Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr Leu

100

105

110

gga aca gaa ttt caa aac act ctt ctt aat tca aat ggt aca att aat 384  
 Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile Asn

115

120

125

aaa acg gct ttt gaa aag gct aaa gct aag ttt tta aat aaa gat aga 432  
 Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp Arg

130

135

140

ctt gaa tat gga tat att agt act tca tta atg aat gtt tct caa ttt 480  
 Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln Phe  
 145 150 155 160

gca gga aga cca att att aca aaa ttt aaa gta gca aaa ggc tca aag 528  
 Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser Lys  
 165 170 175

gca gga tat att gac cct att agt gct ttt gca gga caa ctt gaa atg 576  
 Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Ala Gly Gln Leu Glu Met  
 180 185 190

ttg ctt cct aga cat agt act tat cat ata gac gat atg aga ttg tct 624  
 Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu Ser  
 195 200 205

tct gat ggt aaa caa ata ata att aca gca aca atg atg ggc aca gct 672  
 Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr Ala  
 210 215 220

atc aat cct aaa gaa ttc gtg atg aat ccc gca aac gcg caa ggc aga 720  
 Ile Asn Pro Lys Glu Phe Val Met Asn Pro Ala Asn Ala Gln Gly Arg  
 225 230 235 240

cat aca ccc ggt acc aga ctc tag agctagagaa ggagtttcac ttcaatcgct 774  
 His Thr Pro Gly Thr Arg Leu  
 245

acttgacccg tcggcgaagg atcgagatcg cccacgccct gtgcctcacg gagcgccaga 834

taaagatttg gttccagaat cggcgcatga agtgggaagaa ggaggactaa ctga 888

<210> 43

<211> 247

<212> PRT

<213> Artificial Sequence

<220>

<223> Sequence of C3APLT in a pET vector: includes sequences from ADP-ribosyl transferase C3 (Clostridium botulinum) and a sequence encoding a proline rich region.

<400> 43

Met Ser Arg Val Ala Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn Gln

1 5 10 15

Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln Ala

20 25 30

Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys Ser

35 40 45

Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile Asn

50

55

60

Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser Asn

65

70

75

80

Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met Lys

85

90

95

Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr Leu

100

105

110

Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile Asn

115

120

125

Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp Arg

130

135

140

Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln Phe

145

150

155

160

Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser Lys

165

170

175

Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Ala Gly Gln Leu Glu Met

180

185

190

Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu Ser

195

200

205

Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr Ala

210

215

220

Ile Asn Pro Lys Glu Phe Val Met Asn Pro Ala Asn Ala Gln Gly Arg

225

230

235

240

His Thr Pro Gly Thr Arg Leu

245

&lt;210&gt; 44

&lt;211&gt; 64

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Amino acid sequence of Antennapedia from C3APL



&lt;400&gt; 44

Val Met Glu Ser Arg Lys Arg Ala Arg Gln Thr Tyr Thr Arg Tyr Gln  
1 5 10 15

Thr Leu Glu Leu Glu Lys Glu Phe His Phe Asn Arg Tyr Leu Thr Arg  
20 25 30

Arg Arg Arg Ile Glu Ile Ala His Ala Leu Cys Leu Thr Glu Arg Gln  
35 40 45

Ile Lys Ile Trp Phe Gln Asn Arg Arg Met Lys Trp Lys Lys Glu Asn  
50 55 60

&lt;210&gt; 45

&lt;211&gt; 19

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Amino acid sequence of Antennapedia from C3APS

&lt;400&gt; 45

Arg Gln Ile Lys Ile Trp Phe Gln Asn Arg Arg Met Lys Trp Lys Lys

1 5 10 15

Val Asp Ser

<210> 46

<211> 60

<212> PRT

<213> Artificial Sequence

<220>

<223> Amino acid sequence of HIV-1 Tat from C3-TL

<400> 46

Lys His Pro Gly Ser Gln Pro Lys Thr Ala Cys Thr Asn Cys Tyr Cys

1 5 10 15

Lys Lys Cys Cys Phe His Cys Gln Val Cys Phe Ile Thr Lys Ala Leu

20 25 30

Gly Ile Ser Tyr Gly Arg Lys Arg Arg Gln Arg Arg Arg Ala His Gln

35 40 45

Asn Ser Gln Thr His Gln Ala Ser Leu Ser Lys Gln

50

55

60

<210> 47

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Amino acid sequence of HIV-1 Tat from C3-TS

<400> 47

Tyr Gly Ala Lys Lys Arg Arg Gln Arg Arg Arg Val Asp Ser Ser Gly

1

5

10

15

Pro His Arg Asp

20

<210> 48

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> Amino acid sequence of the proline rich region of C3APLT

<400> 48

Val Met Asn Pro Ala Asn Ala Gln Gly Arg His Thr Pro Gly Thr Arg

1

5

10

15

Leu

<210> 49

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<223> Amino acid sequence fused to C3 protein to created C3 Tat-short

<400> 49

Tyr Gly Arg Lys Arg Arg Gln Arg Arg Arg

1

5

10

<210> 50

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Reverse sequence of Tat amino acids fused to C3 protein to created C3Basic3

<400> 50

Arg Arg Gln Arg Arg Lys Lys Arg

1

5

<210> 51

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> transport peptide rich in Proline

<400> 51

Ala Ala Val Leu Leu Pro Val Leu Leu Ala Ala Pro

1

5

10

<210> 52

<211> 24

<212> PRT

<213> Artificial Sequence

&lt;220&gt;

&lt;223&gt; Sperm fertiline alpha peptide

&lt;400&gt; 52

His Pro Ile Gln Ile Ala Ala Phe Leu Ala Arg Ile Pro Pro Ile Ser

1

5

10

15

Ser Ile Gly Thr Cys Ile Leu Lys

20

&lt;210&gt; 53

&lt;211&gt; 9

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Amino acid sequence from the C3Basic3

&lt;400&gt; 53

Arg Arg Lys Gln Arg Arg Lys Arg Arg

1

5

&lt;210&gt; 54

&lt;211&gt; 744

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Sequence of C3-O7Q189A

&lt;400&gt; 54

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atgtctagag tgcacctgca ggcattgcaat gcttattcca ttaatcaaaa ggcttattca      60
aatacttacc aggagtttac taatattgat caagcaaaaag cttggggtaa tgctcagtat      120
aaaaagtatg gactaagcaa atcagaaaaa gaagctatag tatcatatac taaaagcgct      180
agtgaaataa atggaaagct aagacaaaat aaggagagta tcaatggatt tccttcaa      240
ttaataaaac aagttgaact tttagataaa tcttttaata aaatgaagac ccctgaaaat      300
attatgttat ttagaggcga cgacctgct tathtagga cagaatttca aaacactctt      360
cttaattcaa atggtacaat taataaaacg gcttttgaaa aggctaaagc taagttttta      420
aataaagata gacttgaata tggatatatt agtacttcat taatgaatgt ttctcaattt      480
gcaggaagac caattattac aaaattttaa gtagcaaaaag gctcaaaggc aggatatatt      540
gacctatta gtgcttttgc aggagcactt gaaatgttgc ttctagaca tagtacttat      600
catatagacg atatgagatt gtcttctgat ggtaaacaaa taataattac agcaacaatg      660
atgggcacag ctatcaatcc taaagaattc gtgatgaatc ccgcaaacgc gcaaggcaga      720
catacaccgc gtaccagact ctag                                          744

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&lt;210&gt; 55

&lt;211&gt; 247

&lt;212&gt; PRT

&lt;213&gt; Artificial Sequence

&lt;220&gt;

<223> Amino acid sequence of C3-07Q189A

<400> 55

```

Met Ser Arg Val Asp Leu Gln Ala Cys Asn Ala Tyr Ser Ile Asn Gln
 1             5             10             15
Lys Ala Tyr Ser Asn Thr Tyr Gln Glu Phe Thr Asn Ile Asp Gln Ala
      20             25             30
Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys Ser
      35             40             45
Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile Asn
      50             55             60
Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser Asn
      65             70             75             80
Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met Lys
      85             90             95
Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr Leu
      100            105            110
Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile Asn
      115            120            125
Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp Arg
      130            135            140
Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln Phe
      145            150            155            160
Ala Gly Arg Pro Ile Ile Thr Gln Phe Lys Val Ala Lys Gly Ser Lys
      165            170            175
Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Gln Gly Ala Leu Glu Met
      180            185            190
Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu Ser
      195            200            205

```



Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr Ala

210

215

220

Ile Asn Pro Lys Glu Phe Val Met Asn Pro Ala Asn Ala Gln Gly Arg

225

230

235

240

His Thr Pro Gly Thr Arg Leu

245

&lt;210&gt; 56

&lt;211&gt; 783

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Sequence of BA-05

&lt;400&gt; 56

ggatcctcta	gagtcgacct	gcaggcatgc	aatgcttatt	ccattaatca	aaaggcttat	60
tcaaatactt	accaggagtt	tactaatatt	gatcaagcaa	aagcttgggg	taatgctcag	120
tataaaaagt	atggactaag	caaatcagaa	aaagaagcta	tagtatcata	tactaaaagc	180
gctagtga	taaatggaaa	gctaagacaa	aataaggag	ttatcaatgg	atttccttca	240
aatttaataa	aacaagttga	acttttagat	aaatctttta	ataaaatgaa	gacccctgaa	300
aatattatgt	tatttagagg	cgacgaccct	gcttatttag	gaacagaatt	tcaaacact	360
cttcttaatt	caaatggtac	aattaataaa	acggcttttg	aaaaggctaa	agctaagttt	420
ttaaataaag	atagacttga	atatggatat	attagtactt	cattaatgaa	tgtttctcaa	480
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atgatgggca cagctatcaa tcttaaagaa ttcgtgatga atcccgcaaa cgcgcaaggc 720  
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Lys Ala Trp Gly Asn Ala Gln Tyr Lys Lys Tyr Gly Leu Ser Lys Ser

35 40 45

Glu Lys Glu Ala Ile Val Ser Tyr Thr Lys Ser Ala Ser Glu Ile Asn

50 55 60

Gly Lys Leu Arg Gln Asn Lys Gly Val Ile Asn Gly Phe Pro Ser Asn

65 70 75 80

Leu Ile Lys Gln Val Glu Leu Leu Asp Lys Ser Phe Asn Lys Met Lys

85 90 95

Thr Pro Glu Asn Ile Met Leu Phe Arg Gly Asp Asp Pro Ala Tyr Leu

100 105 110

Gly Thr Glu Phe Gln Asn Thr Leu Leu Asn Ser Asn Gly Thr Ile Asn

115                      120                      125  
 Lys Thr Ala Phe Glu Lys Ala Lys Ala Lys Phe Leu Asn Lys Asp Arg  
 130                      135                      140  
 Leu Glu Tyr Gly Tyr Ile Ser Thr Ser Leu Met Asn Val Ser Gln Phe  
 145                      150                      155                      160  
 Ala Gly Arg Pro Ile Ile Thr Lys Phe Lys Val Ala Lys Gly Ser Lys  
 165                      170                      175  
 Ala Gly Tyr Ile Asp Pro Ile Ser Ala Phe Ala Gly Gln Leu Glu Met  
 180                      185                      190  
 Leu Leu Pro Arg His Ser Thr Tyr His Ile Asp Asp Met Arg Leu Ser  
 195                      200                      205  
 Ser Asp Gly Lys Gln Ile Ile Ile Thr Ala Thr Met Met Gly Thr Ala  
 210                      215                      220  
 Ile Asn Pro Lys Glu Phe Val Met Asn Pro Ala Asn Ala Gln Gly Arg  
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 His Thr Pro Gly Thr Arg Leu  
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35